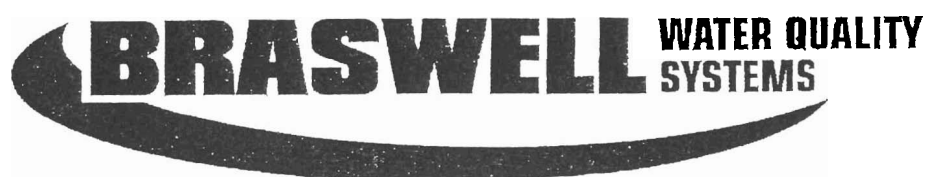


User's Manual

Twin Tank Water Quality System



Congratulations!

Your Twin Tank Water Quality System was designed and manufactured for optimal performance with minimal maintenance. We know you will enjoy its many benefits for years to come. Thank you for choosing our system.

Owner/user responsibility

Please read this User's Manual carefully and familiarize yourself with your new Water Quality System. With a little preventative maintenance, you can reduce the need for service calls.

Before calling for service, please check:

- Is the power cable connected to the 12 volt transformer? Is the transformer plugged into a 120V, continuously hot electrical outlet?
- Does the unit have a sufficient supply of approved salt that has not become hard or bridged?
- Is the unit protected from freezing, including drain lines and lines to and from the brine-tank?
- Is the unit protected from excessive heat or dampness from sweating pipes or leaks?
- Is the water pressure supply to the unit within the limits set by the manufacturer or has the water source been changed?

Be sure your dealer fills in the information below when your Water Quality System is installed.

Model _____

Controller Number _____

Valve Serial Number _____

Date of Installation _____

Dealer _____

Address _____

Service Phone _____

Water Analysis

Hardness _____ GPG

Iron _____ PPM

pH _____

Other _____

Installation Checklist

- ☐ Water pressure should be at least 20 pounds per square inch. If pressure is over 80 PSI, install a pressure reducer. (Most hot water heaters are rated at 75 PSI working pressure.)
- ☐ Flow rate should be at least 4.5 gallons per minute at 20 PSI
- ☐ Drain availability—floor drain, washer drain, etc. Run overhead no more than 5 feet above the water softener. Increase the size of the drain for long runs. All plumbing codes require a 3-inch air gap at the end of the drain line.
- ☐ Electricity—continuously hot receptacle of 120 volts, 60 cycles.
- ☐ Water quality—If the water supply contains sulphur, iron, bacteria, tannins, algae, oils, acids, salt or other unusual substances, your system may require pretreatment.

Do...

- Install the system after the pressure tank. Ask for advice on any special plumbing arrangement.
- Comply with all local plumbing and electrical codes.
- Examine inlet piping. If it is clogged, replace or clean it. Minimum size should be 3/4 inch nominal.

Install gravity drain on the brine tank.

Don't...

- Don't install if inlet water temperature exceeds 120°F.
- Don't allow heat from torches to be transferred to plastic or valve parts.

Softener Installation

(Twin Tank System)

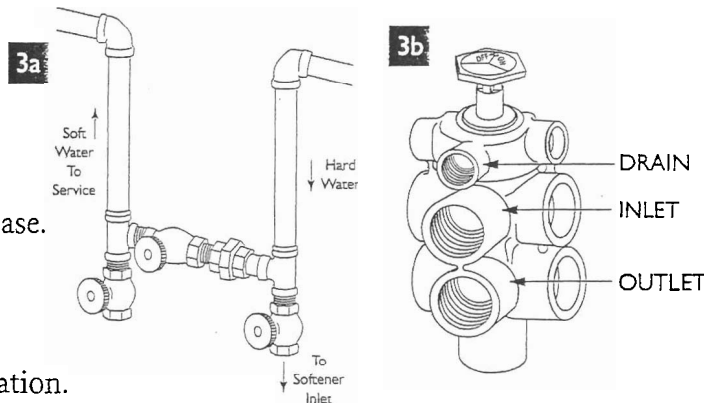
1. Select location for water softener.

- Place as close as possible to pressure tank (well water) or water meter (city water).
- Place close to floor drain, laundry drain or sump.
- Attach softener to the main water line before the water heater.
- Bypass outside water faucets to conserve soft water and salt.
- Place softener where it will not freeze.
- A 120V electrical outlet must be nearby. If softener is to be placed outside, care must be taken to protect all electrical wires, transformer and electronics.
- Protect softener from direct sunlight.
- Floor surface must be smooth and level.

2. Open boxes to verify that there is no damage from shipping and that all parts are included.

- Mounting bracket with wiring, twin tank board and turbine with quest nut.
- 12V (black) transformer.
- Black knobs and studs (in plastic bag attached to control valve).
- Three way plastic adapter or optional brass bypass valve.
- Four connector bars, pan head screws and nuts, two clevises.

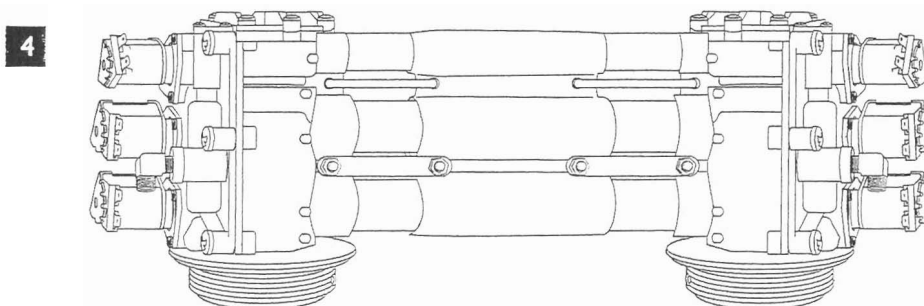
3. Provide an in house bypass valve (3a) or optional brass bypass valve. (3b)



4. Connect the two resin tanks.

- Grease all openings and O-rings with silicone grease.
- Insert the 1" and 1/2" black or gray nipples into both sides of the three way adapter (or optional three way brass bypass valve).
- Place one resin tank in its proper place for installation.
- Press the nipples into the openings of the resin tank control valve.
- Move the second tank into position near the first tank and press them together in order to insert the nipples on the other side of the adapter into the control valve of the second tank.
- Secure both sides using the connector bars and pan head screws. Be sure the nuts are tight.
- Attach clevises in the top holes above the connector bars. (4)

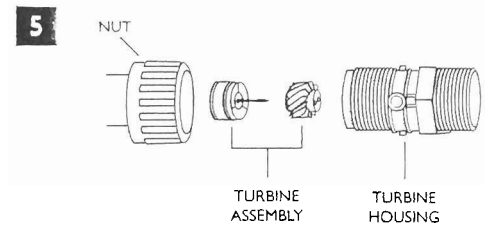
NOTE: All Genus Twin cabinet models are shipped from the factory completely assembled with the exception of the turbine and transformer.



5. Connect the softener.

For Genus Twin:

- Move the softener into place for installation.
- Remove the hood and controller.



For all twin tank models, including the Genus Twin:

- Remove the sensor cable from the turbine.
Spread the clips on each side on the turbine housing and pull sensor out.
- Remove the small O-ring from around the mouth of the sensor cavity.
- Remove the impeller assembly from the turbine housing (replace after lines have been flushed).(5)
- Attach the turbine to the lower 1" (outlet) opening of the noryl adapter using a 1" PVC coupling.
Leave the sensor cavity in a horizontal position for easy access and to prevent water from collecting in the cavity.
- Connect the other end of the turbine to the soft water line of the three way bypass. Use the quest nut or optional 1" nut with 4" copper tail pipe to provide a union for access to the impeller assembly.
- Plumb the main hard water line into the top 1" (inlet) opening on the adapter or optional brass bypass.

6. Install Drain Line

Install a 5/8" I.D. flexible tube for drain using a 1/2" barb fitting (not included) in the 1/2" opening on the adapter or optional brass bypass.

Increase the size of the drain line if it is to run overhead or for a long distance.

7. Install Brine Tank.

- Remove the safety float from the brine well.
Check the valve fittings.
- Remove the rubberband from the bottom of the float and return the float to the brine well.
NOTE: This is not necessary on Genus Twin models.
Attach the 3/8" clear brine harness to both control valves.
- Connect the long tube to the upper elbow that protrudes from the side of the brine tank.
- Connect a 1/2" I.D. plastic tube to the overflow elbow and run it to a floor drain.

8. Flush cuttings and other debris from the lines.

A. FOR A THREE VALVE BYPASS

- Bypass the system by closing the inlet and outlet valves. Open the center bypass valve.
- Open a nearby cold water faucet.
- Open the main water shut off valve to flush lines.
- Place the bypass valve into service. Close the center valve. Open the outlet valve. Open the inlet valve slowly to provide time for the air to escape from the resin tank. Then the tank has been thoroughly flushed place the system back on bypass.
- Loosen the quest nut on the turbine and reinstall the turbine assembly.
- Retighten the quest nut.
- Place the bypass back in service again.
- Close the water faucet.

B. FOR A BRASS BYPASS

- Place the system into bypass. Pull the bypass rod up until it stops. Turn the knob 1/4 turn to lock it into position.
- Open a nearby cold water faucet.
- Open the main water shut off valve to flush the lines.
- Close the main water shut off valve
- Place bypass valve into the service position. Turn the knob to realign it with the screw at the top of the valve and push it all the way down.
- Reopen the main water shut off valve slowly to provide time for the air to escape from the resin tank. When the tank has been thoroughly flushed, place the system back on bypass.
- Loosen the quest nut on the turbine and reinstall the turbine assembly.
- Retighten the quest nut.
- Place the bypass back in service again.
- Close the water faucet.

9. Check the system for leaks.

10. Install the twin tank mounting bracket.

- Remove studs from plastic bags attached to the control valves and screw them into the tapped holes in the center of the top lid of the control valves.

11. Attach the solenoid harness to the control valves.(11)

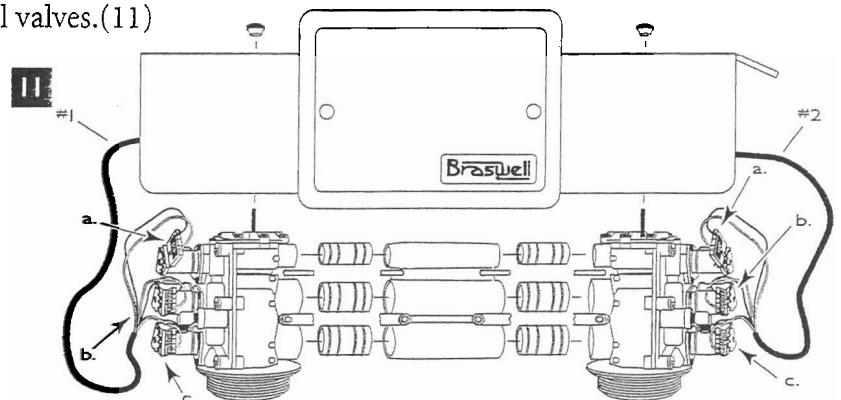
Connect the longer cable (#1) to the control valve on the left.

- Connect the short cable (#2) to the control valve on the right.

Install the red and white cable to the top solenoid coil (#1 brine draw).

Install the green and white cable to the middle solenoid (#2 backwash).

Install the black and white cable to the bottom solenoid (#3 brine tank refill and purge).



NOTE: Use this same procedure for Genus Twin.

12. Complete the installation of the mounting bracket.

- Place the bracket over the top of both control valves and allow the studs in the top lids to come through the small holes in the bracket. Secure the bracket with the black knobs.
- Replace the hood on the Genus Twin.

13. Replace the turbine sensor.

Replace the turbine O-ring around the opening of the sensor cavity.

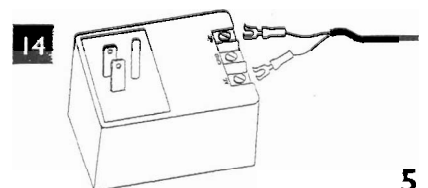
- The proper position for the sensor is identified by a square projection on the clip and a corresponding female depression on the turbine housing.

Slip the sensor into the cavity.

Press gently until both sides of the clip have snapped into place.

14. Attach power cable to the two outside connections of the 12 volt transformer. (14)

Plug transformer into a continuously hot 120V electrical outlet.



Softener Start Up

Remove the acrylic door from the front of the controller hood.

1. Program the TTC (twin tank controller)

STEP 1. SET TANK SIZE

Press scroll. The red light will move to "Tank Size".

Press the up or down button to select tank size. Tank size will appear on the display.

STEP 2. SET PULSE OR NON PULSE

Press scroll. The red light will move to "Pulse".

Press up or down button to set yes for pulse or no for non pulse. Yes or no will appear on the display.

STEP 3. SET TURBINE SIZE

Press scroll. The red light will move to "Turbine Size". Press up or down button to set turbine size.

.75 for Braswell or 1.0 for Autotrol. .75 or 1.00 will appear on display.

STEP 4. SET COMPENSATED HARDNESS

Press scroll. The red light will move to "Compensated Hardness". Press up or down button to set the correct grains of hardness. The speed increases with the length of time the button is depressed. Refer to page 10 for instructions to calculate compensated hardness. The number of grains of hardness will appear on the display.

STEP 5. RETURN TO SERVICE

Press scroll to return the system to service. The number of gallons before regeneration will appear on the display and will count down to zero as water is being used.

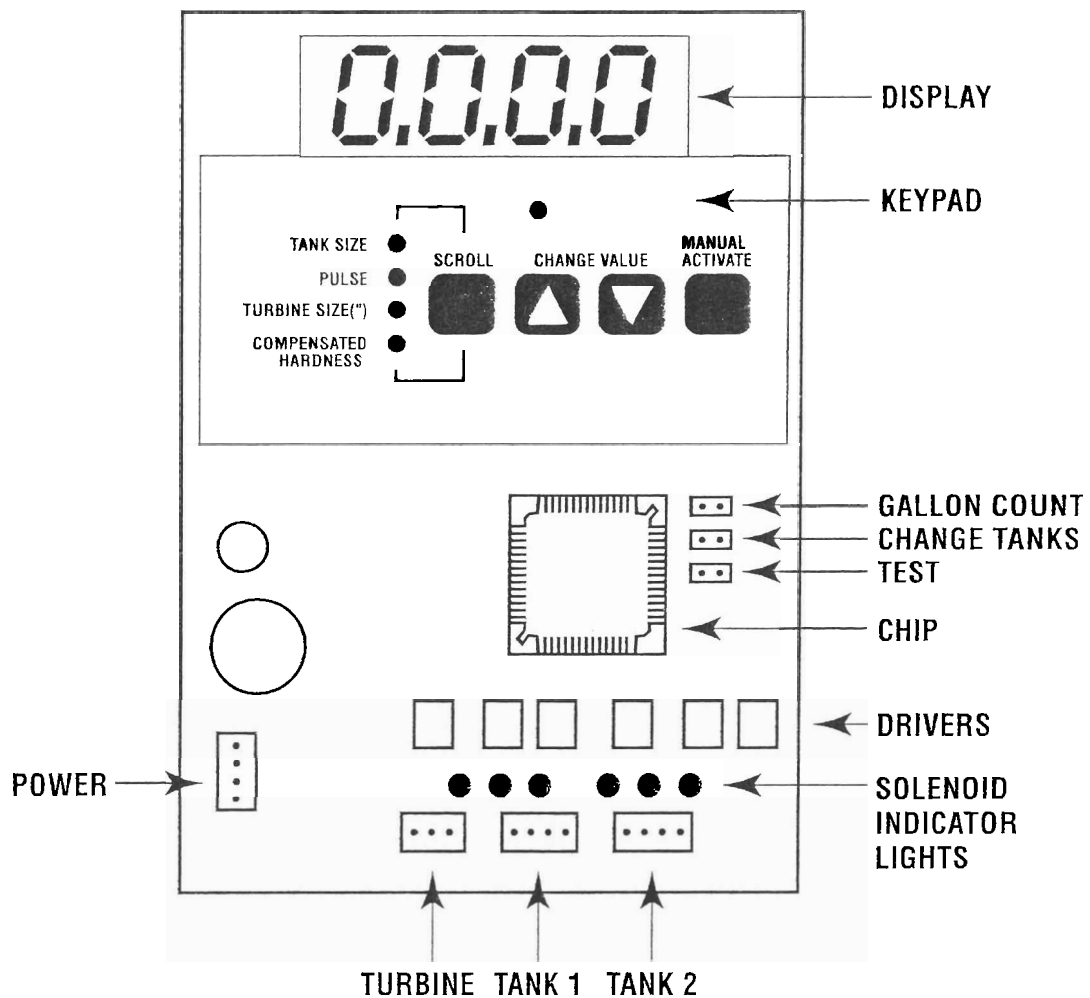
2. Sanitize the softener

- Remove the brine tank cover. Use a hose or pail to fill brine tank with 3 or 4 gallons of water.
- Remove the brine well cover and pour about 1/3 cup of household bleach into the well. Replace brine well cover.
- Press the manual activate button on the TTC to start a regeneration. The first regeneration does a number of things:
 - It draws the bleach into and through the system to sanitize it.
 - It refills the brine tank to the water level needed for the next regeneration.
 - It purges any remaining air from the resin tank.
 - It settles the bed for service.

3. Fill the brine tank with salt.

- Use a good brand of solar or pellet salt.
- Be sure the brine well cover is in place.
Place salt in the brine tank.
- Replace brine tank cover.

Twin Tank Controller (TTC)



Additional Features For Service Technicians

1. JP Prong -- TURBINE COUNTER

- Important: Disconnect the turbine cable before using this feature. Connect the prongs and maintain the connection.
- The system will count down to 0 to determine if the controller will count gallons and initiate a regeneration automatically.

2. JP3 Prong -- SWITCH TANKS

- Connect the prongs T1 or T2 will appear on the display.
- Connect the prongs a second time and the other tank will appear on the display.
- After a few seconds the number of gallons remaining will reappear on the display.

3. JP 1 Prong -- TEST FEATURE

Connect the prongs to activate the test feature. TST 1 or TST 2 will appear on the display.

TEST FOR BRINE DRAW

Press the up button and the number 1 solenoid on the tank display will be activated.

Remove the brine line from the brine tank.

Place your finger over the end to determine if a vacuum is being formed.

Replace the brine line.

- Press scroll again to de-energize the solenoid. The indicator light will disappear.

TEST FOR BACKWASH

IMPORTANT: Both the number one and the number two solenoid valves must be open for the system to backwash.

- Press the up button to energize the number one solenoid.
- Press the down button to energize the number two solenoid. Both the number 1 and the number 2 indicator lights will appear. Water will move up through the resin bed and can be heard running to the drain.
- Press the up button to de-energize the number one solenoid.
- The indicator light will disappear. WAIT AT LEAST 10 SECONDS.
- Press the down button again to de-energize the number two solenoid. The indicator light will disappear.

TEST FOR BRINE REFILL AND PURGE

- Press the manual activate button to energize the number three solenoid. The number three indicator light will appear. Water can be seen in the brine line running to the brine tank.
- Press the manual activate button again to de-energize the number three solenoid.

TEST THE OTHER TANK IN THE SYSTEM

Connect the JP3 prongs and the second tank will appear on the display.

- Repeat the procedure above.
- Press scroll to return the TTC to its service mode. A number will appear on the display which represents the number of gallons left until one of the tanks regenerates. As water is being used it will count down to zero.

4. Manual activate -- MANUAL REGENERATION

- Press manual activate button. The display will indicate which tank is to be regenerated next. The tank number will switch from number 1 to 2 every four seconds. Pick the number to be regenerated and press the manual activate button again. This will complete a regeneration on the tank chosen. When the regeneration on the first tank ends, repeat the above process to regenerate the second tank.
- A regeneration may be stopped at any point by continuing to press the manual activate button to step the system through all cycles to the end.

5. TURBINE INDICATOR LIGHT

- A red light will flash when the turbine turns indicating water use.

IMPORTANT: DO NOT REMOVE SOLENOID WIRES WHEN THE SOLENOID IS ENERGIZED.

Programming the Controller

Calculating compensated hardness

1. Enter grains per gallon of hardness here. _____
2. Enter PPM of iron here. + _____
3. Add lines 1 and 2 and enter result here. , = _____
4. Enter the appropriate compensation factor from chart at right here. x _____
5. Multiply the sum from line 3 by the compensation factor on line 4. Enter result here. = _____

Compensated hardness factors

Result from step 3	Compensation factor
1-20	1.1
21-40	1.2
41-70	1.3
71-100	1.4
100+	1.5

EXAMPLE

10 Grains
+ 3 PPM Iron
= 13 Total Hardness
x 1.1 Compensation Factor for 13 gr H²O
= 14.3 Compensated Hardness

Quick Service Guide

Unit fails to regenerate

Cause	Solution
Electrical service to unit has been interrupted	Assure constant power source
TTC is defective	Replace TTC
Solenoid coils burned out	Replace solenoid coils
Drain is frozen or plugged	Thaw out, replace or clean drain

Unit delivers hard water

Cause	Solution
Bypass open	Close bypass
Bypass O-ring damaged	Replace O-ring(s)
No salt or salt is hard or bridged	Add salt or break up bridging
Aspirator plugged	Clean aspirator
Insufficient water refilling brine tank	Check #3 solenoid coil , refill flow control and tank size setting
Cracked riser tube	Replace riser tube
Back pressure on drain	Correct drain
Broken vacuum breaker spring	Replace spring
#2 solenoid inoperative	Clean solenoid valve Replace solenoid coil

Unit uses too much salt

Cause	Solution
Improper tank size setting	Reset tank size
Excessive water in the brine tank	Defective #1 solenoid. Trash in the brine suction line or under the brine elbow. Trash under the #3 solenoid diaphragm.

Loss of water pressure

Cause	Solution
Iron buildup in the lines to the unit	Clean or replace lines
Iron buildup in the unit	Clean unit with acid or salt additive
Trash in the system	Clean complete control valve and bypass. Add pre-filter.
Clogged upper distributor	Remove and clean upper distributor.

Loss of resin through house lines

Cause	Solution
Defective lower distributor	Replace lower distributor

Iron in conditioned water

Cause	Solution
Salt dosage too low	Reset controller or increase size of flow control
No salt usage	Correct bridging
Oxidized or colloidal iron	Install post-filter (1 or 2 micron)

Excessive water in brine tank

Cause	Solution
#3 solenoid valve leaking	Clean #3 solenoid valve and check for bent solenoid guide
Purge check leaking	Check for trash
Aspirator plugged	Clean aspirator
#1 solenoid coil inoperative	Replace #1 solenoid coil
Blue dot elbow leaking back to B.T. when unit is not regenerating.	Replace elbow or rubber ball - if worn.

Quick Service Guide, *continued*

Unit fails to draw brine

Cause	Solution
Drain line plugged/frozen	Clean drain line
Aspirator plugged	Clean aspirator
#1 solenoid coil inoperative	Replace #1 solenoid coil
Low water pressure	Correct pressure
Trash in the purge check	Clean purge check
Brine tube disconnected	Replace or tighten brine tube
#2 solenoid coil inoperative	Clean or replace solenoid coil

Water runs to drain continuously

Cause	Solution
Trash under #1 or #3 solenoid diaphragm	Clean or replace solenoid diaphragms
Bent solenoid guide	Replace solenoid guide
Broken solenoid spring	Replace solenoid spring
Cage O-ring broken or missing	Replace cage O-ring
Cracked top lid	Replace top lid
Piston return spring caught	Replace or realign piston return spring

Brine tank does not refill

Cause	Solution
#3 solenoid coil inoperative	Replace solenoid coil
Refill flow control plugged	Clean or replace flow control
Driver on TTC inoperative	Replace TTC
#1 solenoid valve not seating out	Remove trash from under diaphragm. Check for swelling - replace

Vacuum breaker leaks

Cause	Solution
Foreign matter in lip of vacuum breaker split ball check.	Clean or replace

Odor

Cause	Solution
Anode rod	Remove rod
Sulfur or methane	Consult dealer
Other organics water conditions changed	Other equipment may be needed

Salty water after regeneration

Cause	Solution
Low water pressure	Increase water pressure
#2 solenoid coil inoperative	Check power or replace
Too much water in brine tank	Check brine refill for continuous flow
Test water for chlorides or nitrates	Add R.O. for drinking or find a new source of supply
Air leak in brine tubing harness	Replace or tighten fittings that leak

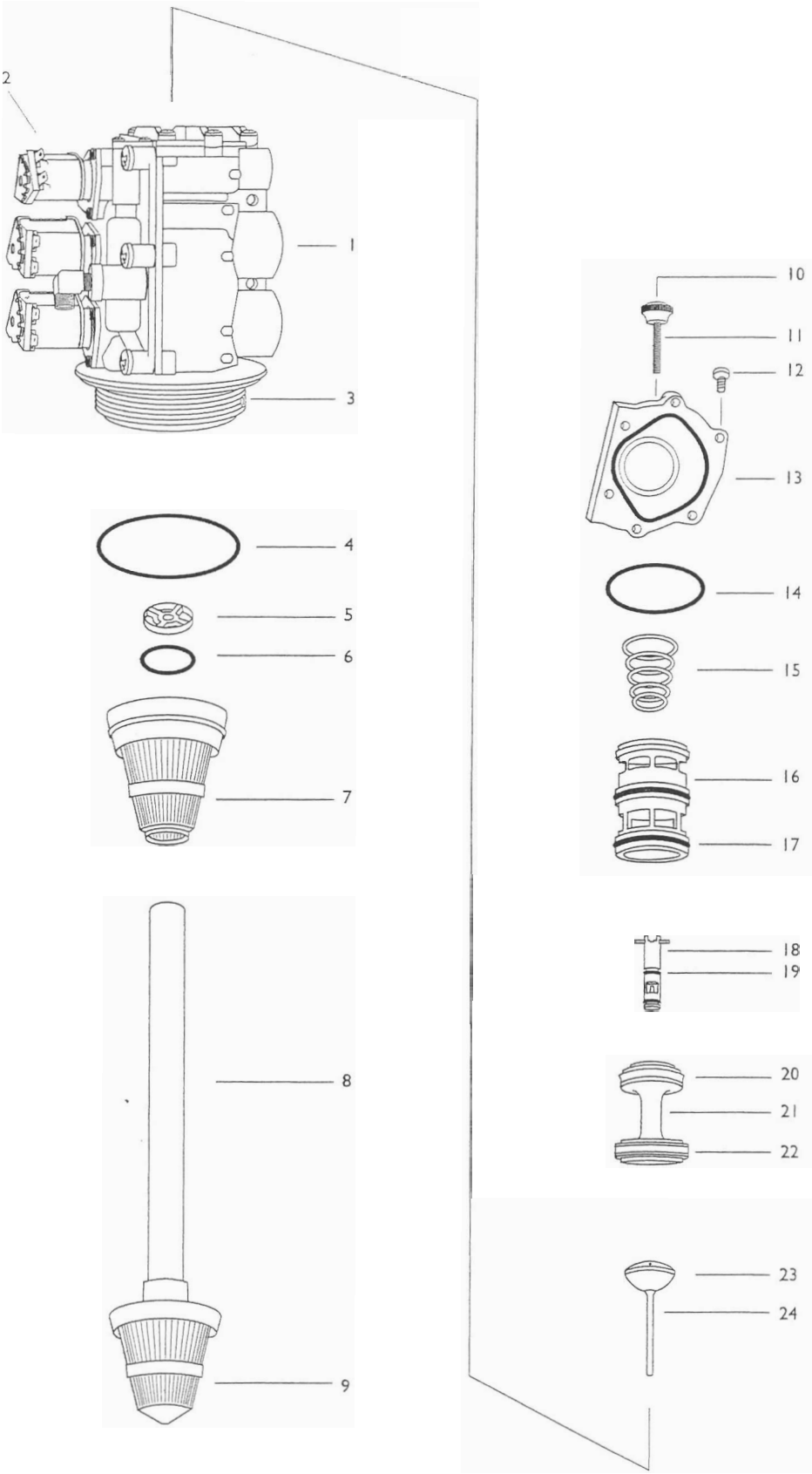
Control Valve Assembly

Ref. No.	Part Number	Description	Units per Assy.
1	1CV41820000**	Control valve body (brass or noryl)	1
2	A1CMBY110850*	Control module assy, complete	1
3	1SCR612SS000	Upper distributor mounting screw #6 X 1/2 PL FH SM 18-8 SS	2
4	1ORING235000	Valve base O-ring #235	1
5	1CKSTEMGUIDE	Check stem guide	1
6	1ORING121000	Riser tube O-ring #121	1
7	1UD20SEG0130	Braswell upper distributor	1
8	5RT1050ABSO*	Riser tube	1
9	5LD10SEG0000	Braswell lower distributor	1
10	3NUTK1032NPO	Black knob	1
11	1STUD10321SS	Stud ¹⁰ / ₃₂ X 1 18-8 SS	1
12	1SCR103212AA	Top lid mounting screw ¹⁰ / ₃₂ X 1/2 PL RH MS 18-8 SS	6
13	1TOPLID00000	Top lid	1
14	1ORING142000	Top lid O-ring #142	1
15	1PISTONSPG00	Piston return spring	1
16	1PISTONCAGE0	Piston cage	1
17	1ORING127000	Cage O-ring #127	3
18	S1ASPA100000	Aspirator	1
19	1ORING010000	Aspirator O-ring #010	2
20	1PISTONCUPSL	Piston cup seal	1
21	S1PISTONW000	Piston	1
22	1PISTONGAST0	Piston gasket	2
23	*1STEMCKSEAL0	Stem check seal	1
24	1STEMCHECK00	Stem check	1

* Specify tank size

** Specify brass or noryl

Control Valve Assembly

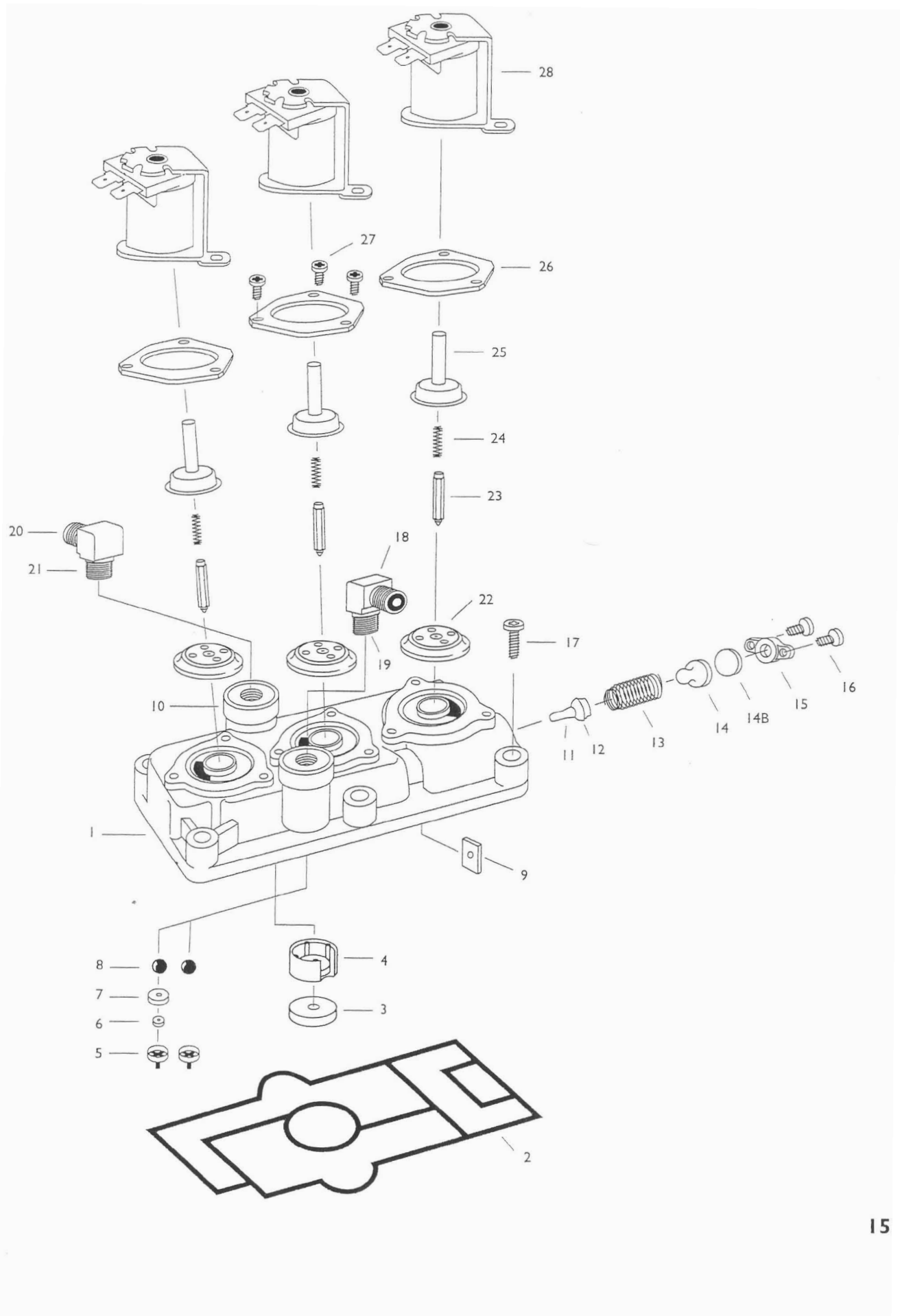


Control Module Assembly

Ref. No.	Part Number	Description	Units per Assy.
1	1CMBDY000000	Control module body	1
2	1CMSEAL00000	Control module seal	1
3	1BWFC1000000	Backwash flow control	1
4	1BWFCSUP0000	Backwash flow control support	1
5	1BDRKEEPER00	Brine draw and refill keeper	2
6	1RFC00000000*	Refill flow control	1
7	1RFCRETAIN00	Refill flow control retainer	1
8	1516CKBALL00	$\frac{5}{16}$ diameter check balls	2
9	1PURGEGATE00	Purge gate	1
10	1BRRING 14580	Brass ring	2
11	1PURGECK0000	Purge check	1
12	1PURGECKSEAL	Purge check seal	1
13	1VBSPRING000	Vacuum breaker spring	1
14	1VBBALLCK000	Vacuum breaker split ball check	1
14B		Felt pad	
15	1VBCOVER0000	Vacuum breaker cover	1
16	1SCR8716ST00	Vacuum breaker mounting screw #8 X $\frac{7}{16}$	2
17	1SCR142034SS	Control module mounting screw $\frac{1}{4}$ -20 X $\frac{3}{4}$ PL PAN HD MS 18-8 SS	6
18	138BREL18MP	Brass elbow $\frac{3}{8}$ OD X $\frac{1}{8}$ MPT	1
19	1INSSTOP0000	Ball check stop insert (outlet)	1
20	138BREL18MP	Brass elbow $\frac{3}{8}$ OD X $\frac{1}{8}$ MPT	1
21	1INSSEAT0000	Ball seat insert (inlet)	1
22	1SOLDIAPHRAG	Solenoid diaphragm high lift	3
23	1SOLARMATURE	Solenoid armature	3
24	1SOLSPRING00	Solenoid spring	3
25	1SOLGUIDE000	Solenoid guide	3
26	1SOLRETAINTER	Solenoid retainer	3
27	1SCR8716ST00	Solenoid mounting screw #8 x $\frac{7}{16}$ SS	9
28	1SOL110B0000	Solenoid	

* Specify tank size

Control Module Assembly



Limited Residential Warranty

This warranty is extended to the original owner only and is not transferable so subsequent owners of this equipment.

To place the equipment under warranty, THE WARRANTY REGISTRATION CARD MUST BE COMPLETED IN ITS ENTIRETY AND RETURNED TO 415 E. WASHINGTON ST., Jackson, Missouri 63755, within thirty (30) days of installation by a factory-authorized dealer.

Terms

The manufacturer warrants its equipment to be free of defects of workmanship and materials for the following terms.

Defective parts will be repaired or replaced FOB Factory when received from the original owner along with the serial number.

10 Years: From date of manufacture of valve bodies.

5 Years: From date of manufacture of all electronic controls, control valve solenoids, gaskets, springs and seals. The brine tank and mineral tank if not exposed to direct sunlight.

Limitations

Your equipment must be sold by an authorized dealer in order to receive benefits of this warranty.

This warranty does not cover damage due to:

- abuse, misuse or neglect
- excessive water pressure (over 125 PSI)
- excessive water temperature (over 120°F)
- freezing
- alterations
- application or installation not in accordance with published factory specifications or the instructions provided in the users manual or not conforming to local codes
- over-chlorinated water (over 1.5 ppm residual)
- any other act of God not reasonably within the dealer's or manufacturer's power to prevent or control.

This warranty does not cover labor or service call costs incurred with respect to the removal or replacement of any defective part or parts.

Bacterial iron, algae, sand or other unusual substances present in the water to be processed must be removed before entering this product.

There are no other warranties, expressed or implied, other than stated in this document to the extent permitted by local and state laws.

The manufacturer, shall not be liable for indirect, special or consequential damages in connection with the use of this equipment to the extent allowed by local state laws.

Authorized Distributor

Braswell

Braswell Water Quality Systems, Inc.
415 E. Washington
Jackson, Missouri 63755
573 243-3660 ■ 573 243-5334 fax

**WATER QUALITY
ASSOCIATION**
MEMBER

